



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,663	12/05/2003	Onur G. Guleryuz	AP188TP	2824

20178 7590 08/24/2005

EPSON RESEARCH AND DEVELOPMENT INC
INTELLECTUAL PROPERTY DEPT
150 RIVER OAKS PARKWAY, SUITE 225
SAN JOSE, CA 95134

EXAMINER

CHAWAN, SHEELA C

ART UNIT PAPER NUMBER

2625

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/729,663	GULERYUZ, ONUR G.	
	Examiner	Art Unit	
	Sheela C. Chawan	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-12, 16- 29 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| ✓ 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/5/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The Examiner has approved drawings filed on 10/9/03.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12/5/03 has been considered by the examiner.

Drawings

3. The Examiner has approved drawings filed on 10/9/03.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 10- 12, 17-20, 24 28, are rejected under 35 U.S.C. 102(b) as being anticipated by Triplett et al., (US. 6,347,153 B1).

As to claim 1, Triplett discloses a method of labeling (classifying different groups of the pixel values corresponds to labeling. Classifying a pixel of image data as one of

the plurality of image types is based on plurality of image characteristic for the pixel is determined based on resolution, abstract, fig 10, column 24, lines 10- 28, column 25, lines 46- 61) digital image data (column 9, lines 17-23) associated with a compound document (column 10, lines 13-20) in a single pass, comprising:

receiving image data (note fig 2, receiving input data);

distributing the image data to multiple branches (fig 2, item 30 corresponds to multiple branches), wherein at least two of the multiple branches include filters configured to blur the image data at different resolutions (column 6, lines 24- 37, column 10, lines 21- 32, 51- 65, column 38, lines 55- 65);

detecting (column 38, lines 43-54) edges of the blurred image data at the different resolutions (column 38, lines 55- 65);

detecting edges of unfiltered image data (column 6, lines 46- 57, column 30, lines 14-25, fig 2);

combining data output from the at least two of the multiple branches (fig 2, item 41, mixer corresponds to combining multiple branches, column 11, lines 10-29, column 39, lines 27- 43, column 40, lines 1-5); and

determining whether the combined data is to be labeled as a low resolution halftone (note, a computer workstation program is used in accordance with document creation application software or from a data storage device, column 9, lines 17-23, column 40, lines 38- 44, column 38, lines 43- 67).

As to claim 2, Triplett discloses the method wherein the method operation of detecting edges of the blurred image data at the different resolutions includes,

suppressing halftones associated with the image data at a first suppression level in a first branch of the at least two of the multiple branches (Classifying a pixel of image data as one of the plurality of image types is based on plurality of image characteristic for the pixel is determined based on resolution, fig 7, item 82, column 38, lines 22-54, column 40, lines 45- 53); and

suppressing the halftones at a second suppression level in a second branch of the at least two of the multiple branches (fig 7 column 38, lines 22- 54, column 40, lines 45- 53).

As to claim 3, Triplett discloses a system and method for processing document images, utilizing a fuzzy logic classification process (column 12, lines 56- 62).

As to claim 4, Triplett discloses the method wherein a number of the multiple branches are equal to three (fig 2, item 31, 32 and 34).

As to claim 5, Triplett discloses the method wherein the method operation of determining whether the combined data is to be labeled as low resolution halftone data includes, counting a number of logical values associated with real edges (column 30, lines 29-67);

comparing the number with a threshold value (column 2, lines 53-65, column 31, lines 1-35);

if the number is greater than or equal to the threshold value, then the method includes (column 16, lines 59-67, column 17, lines 1-26), labeling a region associated with the combined data as a low resolution halftone region (column 4, lines 53-63, column 39, lines 27- 43, column 40, lines 1-5).

As to claim 6, see the above rejection of claim 1.

As to claim 10, Triplett discloses the method further comprising:

detecting edges on unfiltered data (column 6, lines 46-57, column 30, lines 14-25);

combining data representing edges from the unfiltered data and the output of the filter associated with the second resolution (fig 2); and

identifying halftone regions from the combination of the data representing edges from the unfiltered data and the output of the filter associated with the second resolution (column 6, lines 46-47, column 30, lines 14-25, column 38, lines 43-54, 55-65).

As to claim 11, Triplett discloses the method wherein the first resolution causes a more pronounced blurring effect relative to the second resolution (column 8, lines 43-67).

As to claim 12, see the above rejection of claim 1.

As to claim 17, Triplett discloses an image replication system, comprising:

labeling module (column 9, lines 17-23, column 10, lines 13-20) configured to segment image data corresponding to a compound document, the labeling module including (column 9, lines 17-23),

multiple branches (fig 2, item 30) including edge detection modules for detecting edges of the compound document, a plurality of the multiple branches capable of filtering the image data at different resolutions (column 38, lines 55-65);

logic for combining output of at least two of the multiple branches in order

to initially identify a portion of the compound document as a halftone portion (fig 2, item 41, column 5, lines 12-29, column 6, lines 24-37); and

a counting module configured to count pixel values within a neighborhood (column 30, lines 30-53) to determine whether the initially identified halftone portions finally labeled as a halftone region (column 27, lines 2-7, column 35, line 10-24).

As to claim 18, Triplett discloses the image replication system wherein the counting module includes, a threshold module configured to compare a pixel counting result to a threshold value, wherein if the threshold value is less than or equal to the pixel counting result (column 7, lines 33-40, column 11, lines 10-20), then the initially identified halftone portion is finally labeled as the halftone region (column 30, lines 39-53, column 31, lines 25-35, column 35, lines 10-51, column 36, lines 46- 67).

As to claim 19, Triplett the image replication wherein the multiple branches include a single branch capable of performing edge detection on unfiltered data (column 6, lines 46-57).

As to claim 20, Triplett discloses the image replication system wherein the labeling module further includes:

a labeling module configured to further label the halftone region as one of a text on halftone region and a no-text on halftone region (column 35, lines 10- 37).

As to claim 25, see the above rejection of claim 1.

As to claim 24, Triplett discloses the image replication device wherein the image replication device is a device selected from the group consisting of a copier, a printer (column 4, lines 7-9), a scanner (column 3, lines 48- 52), and a facsimile.

As to claim 26, Triplett the integrated circuit wherein the filter circuitry is configured to low pass filter the image data in order to blur halftones prior to edge detection (fig 22, item 24 corresponds to 2D blur filter are used).

As to claim 27, Triplett discloses the integrated circuit wherein the circuitry for combining at least two outputs of the multiple branches includes (column 27, lines 8-20), circuitry for adding the at least two outputs (fig 5 and fig 7, item 84,85 and 86); and circuitry for subtracting a result of the circuitry for adding from one of the least two outputs (column 29, lines 1-9).

As to claim 28, Triplett the integrated circuit wherein the circuitry for identifying the image data region type includes, counting circuitry configured to compute a pixel value count within a neighborhood defined around a pixel of the image data (column 37, line 41 through column 38, line 9); and

comparison circuitry configured to compare the pixel value count with a threshold value to determine a label associated with the image data region type (column 11, lines 10-29, column 39, lines 27- 43, column 40, lines 1-5).

5. Claims 21- 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Triplett et al., (US. 6,347,153 B1), as applied to the claims 1-6, 10- 12, 17-20, 24 28 above and further in view of Lavallee et al., (US.4,288,821).

Regarding claim 21 Triplett discloses a system and method for processing document images, utilizing a fuzzy logic classification process. Triplett is silent about a descreening module configured to descreen data associated with the halftone region

that is received from the labeling module, the descreening module further configured to output the filtered image data corresponding to one of the different resolutions.

Lavallee discloses a signal processing architecture for image filtering to improved signal processing architecture for image filtering employing multiple scanning arrays of differing resolution. The system comprising:

a descreening module (fig 3, item 52) configured to descreen (fig 3, item 52 and 54) data associated with the halftone region that is received from the labeling module, the descreening module further configured to output the filtered image data corresponding to one of the different resolutions (abstract, column 1, lines 27- 47, column 3, lines 13- 61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Triplett to include a descreening module configured to descreen data associated with the halftone region that is received from the labeling module, the descreening module further configured to output the filtered image data corresponding to one of the different resolutions. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Triplett by the teaching of Lavallee in order to improve signal processing architecture for image filtering employing multiple scanning arrays of differing resolution,(as suggested by Lavallee at column 1, lines 5- 9).

As to claim 22, Lavallee the image replication system further comprising:

an enhancement module configured to enhance edges through an unsharp masking scheme (column 5, lines 43- 51).

As to claim 23, Lavallee discloses the image replication system wherein the halftone portion is a low resolution halftone portion, the low resolution halftone portion being defined as a halftone region without edges when processed through a branch without filtering capability and a halftone region having edges when processed through one of the plurality of the multiple branches capable of filtering (column 7, lines 5 - 38).

As to claim 29, Lavallee discloses the integrated circuit further comprising: descreening circuitry configured to blur halftone regions (fig 3, item 52); and enhancement circuitry configured to define edges over the blurred halftone regions (column 5, lines 27- 51).

Allowable Subject Matter

6. Claims 7 - 9, 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Williams et al., (US.6,229,923 B1) discloses method and system for classifying and processing of pixel of image data.

Clouthier et al., (US.5, 949, 964) discloses method and apparatus for halftoning of images in a printer.


Williams (US.5,327,262) discloses automatic image segmentation with smoothing.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Friday 7.30 - 4.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453 . The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

✓ 
Sheela Chawan
Patent Examiner
Group Art Unit 2625
August 19, 2005